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NATIONAL CULTURE AND THE ASSET GROWTH EFFECT: INSIGHTS FROM THE OVERINVESTMENT HYPOTHESIS

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INTRODUCTION

- Asset Growth Effect
  - Negative corporate investment-return relation
  - U.S. evidence: Baker, Stein, and Wurgler (2003); Titman, Wei, and Xie (2004); Anderson and Garcia-Feijóo (2006); Cooper, Gulen, and Schill (2008)
  - International evidence: Titman, Wei, and Xie (2013); Watanabe, Xu, Yao, and Yu (2013)

INTRODUCTION

- Possible Explanations
  - Overinvestment hypothesis (Titman, Wei, and Xie, 2004)
  - Limits-to-arbitrage (Li and Zhang, 2010; Lipson, Mortal, and Schill, 2011)
  - Q-theory (Lam and Wei, 2011; Titman, Wei, and Xie, 2013; Watanabe, Xu, Yao, and Yu, 2013)

INTRODUCTION

- How to distinguish the explanations in international equity markets?
  - Market development (q-theory versus overinvestment)
  - Market efficiency (q-theory versus limits-to-arbitrage)
  - Investor protection, corporate governance, accounting quality (alternative forms of mispricing)

INTRODUCTION

- National cultures and asset growth effect
  - Managerial overconfidence enhances overinvestment
  - Uncertainty avoidance mitigates overinvestment
  - The two psychological dimensions serve as proxies for the overinvestment hypothesis
- Individualism and uncertainty avoidance proxy for overinvestment!

TESTABLE HYPOTHESES

- H1: Managerial overconfidence enhances overinvestment
  - Asset growth effect is stronger in individualistic cultures
- H2: Uncertainty avoidance mitigates overinvestment
  - Asset growth effect is stronger low uncertainty-avoiding cultures

TESTABLE HYPOTHESES

- H3: National cultures surpass market development and efficiency in explaining asset growth effect
  - Cross-sectional regressions to compare alternative explanations simultaneously

DATA AND VARIABLE CONSTRUCTIONS

- A sample consisting of all common listed stocks from 41 countries over 1982-2013
  - Monthly market and accounting data for international markets are obtained from the Datastream International database
  - U.S. data are obtained from CRSP and Compustat
  - Country-level individualism and uncertainty avoidance indices are obtained from Hofstede (1980, 2001) and Hofstede, Hofstede, and Minkov (2010)

DATA AND VARIABLE CONSTRUCTIONS

- Measurement of asset growth:

$$TAG_{i,t} \equiv \frac{TA_{i,t-1} - TA_{i,t-2}}{TA_{i,t-2}}$$

- Variable constructions are the same with Fama and French (1992)
  - We also consider firm size, book-to-market ratio, and past returns in Fama-MacBeth regressions
- Returns are converted into U.S. dollars

INDIVIDUALISM AND ASSET GROWTH ANOMALY

	Equally-weighted returns						Value-weighted returns					
IDV	AG1		AG10		AG1-AG10		AG1		AG10		AG1-AG10	
Low	1.202	***	0.966	**	0.236		0.732	*	0.844	*	-0.113	
	(3.10)		(2.27)		(1.43)		(1.92)		(1.89)		(-0.60)	
Median	1.347	***	0.997	**	0.350	*	1.149	***	0.992	**	0.157	
	(3.68)		(2.48)		(1.92)		(2.94)		(2.32)		(0.74)	
High	1.033	***	0.283		0.750	***	1.037	***	0.404		0.633	***
	(2.85)		(0.75)		(5.66)		(3.15)		(1.10)		(3.73)	
High-Low	-0.169		-0.683	**	0.514	***	0.305		-0.441		0.745	***
	(-0.57)		(-2.21)		(2.60)		(1.03)		(-1.40)		(3.02)	

INDIVIDUALISM AND ASSET GROWTH ANOMALY

	Equally-weighted returns						Value-weighted returns					
UAI	AG1		AG10		AG1-AG10		AG1		AG10		AG1-AG10	
Low	1.306	***	0.683	*	0.624	***	1.112	***	0.489		0.624	***
	(3.39)		(1.66)		(4.96)		(2.96)		(1.17)		(3.80)	
Median	1.131	***	0.558		0.573	***	0.805	**	0.654	*	0.151	
	(3.35)		(1.44)		(4.03)		(2.50)		(1.67)		(0.80)	
High	1.120	***	0.996	***	0.124		1.011	***	1.079	***	-0.069	
	(3.18)		(2.70)		(0.63)		(2.69)		(2.69)		(-0.29)	
High-Low	-0.187		0.313		-0.500	**	-0.102		0.591	**	-0.692	**
	(-0.74)		(1.23)		(-2.34)		(-0.39)		(2.27)		(-2.53)	

ROBUSTNESS

- Our results are robust to
  - The exclusion of the U.S. market
  - Subperiods partitioned by 1999
  - Denomination in local currencies

FURTHER EVIDENCE FOR OVERINVESTMENT

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	Equally-weighted returns			Value-weighted returns		
	AG1	AG10	AG1-AG10	AG1	AG10	AG1-AG10
Low debt ratio						
Low IDV	1.092 ***	1.177 ***	-0.085	0.571	0.938 **	-0.368
	(3.18)	(2.76)	(-0.44)	(1.61)	(2.12)	(-1.65)
Median IDV	1.328 ***	0.778 *	0.550 **	1.202 ***	0.597	0.606 **
	(3.46)	(1.88)	(2.49)	(2.98)	(1.42)	(2.25)
High IDV	1.124 ***	0.291	0.833 ***	0.712 *	0.192	0.520 **
	(2.81)	(0.67)	(4.14)	(1.79)	(0.43)	(2.23)
High-Low	0.032	-0.886 **	0.918 ***	0.141	-0.747 **	0.888 ***
	(0.11)	(-2.52)	(3.62)	(0.42)	(-2.01)	(2.96)
Median debt ratio						
Low IDV	1.483 ***	1.151 ***	0.331	1.207 ***	1.002 **	0.204
	(3.41)	(2.62)	(1.64)	(2.70)	(2.17)	(0.92)
Median IDV	1.220 ***	0.805 *	0.415 *	1.232 ***	0.842 *	0.389
	(2.91)	(1.91)	(1.68)	(2.92)	(1.94)	(1.41)
High IDV	0.978 ***	0.362	0.616 ***	1.023 ***	0.617	0.407 **
	(2.76)	(0.96)	(3.97)	(2.86)	(1.59)	(2.30)
High-Low	-0.505	-0.790 **	0.285	-0.184	-0.386	0.202
	(-1.40)	(-2.44)	(1.13)	(-0.49)	(-1.15)	(0.77)
High debt ratio						
Low IDV	0.962 **	1.033 **	-0.071	0.833 *	0.988 **	-0.155
	(2.10)	(2.29)	(-0.30)	(1.72)	(2.12)	(-0.58)
Median IDV	0.811 **	0.670	0.141	0.758 *	0.579	0.179
	(2.10)	(1.50)	(0.52)	(1.76)	(1.19)	(0.56)
High IDV	0.794 **	0.166	0.628 ***	0.673 **	0.430	0.244
	(2.12)	(0.45)	(4.07)	(1.99)	(1.16)	(1.33)
High-Low	-0.168	-0.867 **	0.699 **	-0.159	-0.558	0.399
	(-0.45)	(-2.49)	(2.53)	(-0.41)	(-1.64)	(1.24)

FURTHER EVIDENCE FOR OVERINVESTMENT

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	Equally-weighted returns			Value-weighted returns		
	AG1	AG10	AG1-AG10	AG1	AG10	AG1-AG10
Low debt ratio						
Low UAI	1.377 ***	0.754 *	0.623 ***	0.931 **	0.345	0.586 ***
	(3.49)	(1.75)	(3.45)	(2.44)	(0.81)	(2.83)
Median UAI	1.037 ***	0.539	0.499 **	0.633 *	0.430	0.203
	(2.96)	(1.23)	(2.30)	(1.71)	(0.95)	(0.79)
High UAI	1.180 ***	0.935 **	0.245	0.985 ***	0.942 **	0.043
	(3.27)	(2.52)	(1.01)	(2.64)	(2.38)	(0.17)
High-Low	-0.197	0.181	-0.378	0.054	0.597 **	-0.543 *
	(-0.77)	(0.66)	(-1.39)	(0.20)	(2.12)	(-1.83)
Median debt ratio						
Low UAI	1.452 ***	0.725 *	0.727 ***	1.318 ***	0.759 *	0.560 **
	(3.56)	(1.74)	(4.22)	(3.23)	(1.72)	(2.55)
Median UAI	1.147 ***	0.426	0.721 ***	1.010 ***	0.488	0.521 **
	(2.93)	(1.05)	(3.24)	(2.61)	(1.24)	(2.13)
High UAI	1.083 ***	1.170 ***	-0.087	1.140 ***	1.212 ***	-0.073
	(3.09)	(3.11)	(-0.40)	(3.02)	(2.93)	(-0.29)
High-Low	-0.369	0.445 *	-0.814 ***	-0.179	0.454	-0.632 **
	(-1.35)	(1.76)	(-3.32)	(-0.60)	(1.49)	(-2.02)
High debt ratio						
Low UAI	1.011 **	0.762 *	0.249	0.970 **	0.793 *	0.178
	(2.36)	(1.82)	(1.20)	(2.26)	(1.85)	(0.80)
Median UAI	0.872 **	0.390	0.482 **	0.689 *	0.416	0.273
	(2.35)	(0.99)	(2.44)	(1.79)	(1.01)	(1.08)
High UAI	0.732 **	0.705 *	0.028	0.656	0.756 *	-0.100
	(2.01)	(1.73)	(0.11)	(1.63)	(1.70)	(-0.35)
High-Low	-0.279	-0.058	-0.222	-0.315	-0.037	-0.278
	(-1.02)	(-0.19)	(-0.71)	(-1.04)	(-0.12)	(-0.87)

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FAMA-MACBETH REGRESSIONS

	Individualism (IDV)			
Variable	Low	Median	High	High-Low
Ln(1+*TAG*)	-0.180	-0.139	-0.586***	-0.406**
	(-1.19)	(-0.92)	(-6.14)	(-2.45)
Ln*SIZE*	-0.153***	-0.145***	-0.040	0.114*
	(-3.39)	(-2.86)	(-1.06)	(1.97)
Ln*BM*	0.130**	0.050	0.026***	-0.105*
	(2.43)	(1.19)	(2.71)	(-1.93)
PRET	-0.151	-0.063	0.617***	0.768***
	(-0.58)	(-0.36)	(4.25)	(2.95)

FAMA-MACBETH REGRESSIONS CONTROLLING FOR OTHER EFFECTS

	Uncertainty avoidance (UAI)			
Variable	Low	Median	High	High-Low
Ln(1+*TAG*)	-0.585***	-0.477***	0.019	0.603***
	(-5.57)	(-5.08)	(0.13)	(3.66)
Ln*SIZE*	-0.073*	-0.122***	-0.128***	-0.055
	(-1.72)	(-3.30)	(-2.94)	(-0.87)
Ln*BM*	0.001	0.020**	0.080*	0.079
	(0.03)	(2.30)	(1.66)	(1.33)
PRET	0.424**	0.487**	-0.275	-0.699***
	(2.25)	(2.56)	(-1.26)	(-3.06)

CONTROLS OF ALTERNATIVE NATIONAL-WIDE INDICES

- Market development of Titman, Wei, and Xie (2013)
  - Developed market (DEVP), Access-to-equity market index (EQUITY), Market-cap-to-GDP ratio (MKTCAP), and Ratio of value traded to GDP (LIQUID)
- Market efficiency of Watanabe, Xu, Yao, and Yu (2013)
  - Stock return synchronicity (R^2), Importance of stock market (MKT), and Future earnings response coefficient (FERC)

CONTROLLING FOR MARKET DEVELOPMENT AND EFFICIENCY

Model	IDV	UAI	DEVP	EQUITY	MKTCAP	LIQUID	R^2	MKT	FERC
Panel A: Univariate regressions									
Equal weights	1.155 ***	-0.895 **	0.528 **	0.489 **	0.002	0.003 *	-3.842 **	0.008 *	0.426 **
	(3.58)	(-2.37)	(2.32)	(2.16)	(0.91)	(1.68)	(-2.31)	(1.66)	(2.45)
Value weights	1.213 ***	-1.281 ***	0.666 **	0.453 *	0.001	-0.001	-6.051 ***	0.006	0.326
	(2.96)	(-2.87)	(2.42)	(1.84)	(0.37)	(-0.52)	(-3.19)	(0.97)	(1.41)
Panel B: Asset growth portfolios formed on equal weights									
Model 1	1.028 ***	-0.673 *							
	(3.25)	(-1.81)							
Model 2	1.233 ***	-0.587	-0.060						
	(3.04)	(-1.61)	(-0.21)						
Model 3	0.966 **	-0.485		0.253					
	(2.14)	(-1.34)		(0.84)					
Model 4	1.179 ***	-0.735 **			-0.001				
	(3.49)	(-2.03)			(-0.69)				
Model 5	0.980 ***	-0.611 *				0.002			
	(2.96)	(-1.65)				(1.12)			
Model 6	1.044 **	-0.614					-0.880		
	(2.33)	(-1.64)					(-0.38)		
Model 7	1.237 ***	-0.465						0.002	
	(3.78)	(-1.28)						(0.42)	
Model 8	0.889 ***	-0.622							0.255
	(2.75)	(-1.61)							(1.39)
Panel C: Asset growth portfolios formed on value weights									
Model 1	1.058 ***	-1.103 **							
	(2.61)	(-2.49)							
Model 2	1.032 **	-1.073 **	0.121						
	(2.11)	(-2.55)	(0.34)						
Model 3	1.466 ***	-1.239 ***		-0.024					
	(2.82)	(-2.92)		(-0.07)					
Model 4	1.310 ***	-1.437 ***			-0.004				
	(3.19)	(-3.32)			(-1.65)				
Model 5	1.117 ***	-1.300 ***				-0.002			
	(2.67)	(-3.06)				(-1.16)			
Model 6	0.860 *	-0.978 **					-3.548		
	(1.68)	(-2.17)					(-1.41)		
Model 7	1.382 ***	-1.152 ***						-0.003	
	(3.47)	(-2.62)						(-0.48)	
Model 8	0.997 **	-1.192 ***							0.191
	(2.33)	(-2.60)							(0.76)

CONTROLLING FOR ALTERNATIVE INDICES

										Legal origin			
	TCOST	IRISK	DVOL	SHORT	CR	AD	AS	ACCT	EMS	UK	FR	GE	SC
Multivariate regressions													
IDV	1.612 ***	1.064 ***	1.176 **	1.308 ***	1.201 ***	1.212 ***	1.056 **	1.633 ***	1.312 **		1.110 ***		
	(3.33)	(2.60)	(2.32)	(2.76)	(2.91)	(2.77)	(2.53)	(3.98)	(2.32)		(2.65)		
UAI	-1.022 **	-0.953 **	-1.100 **	-0.915 **	-1.338 ***	-1.121 **	-1.511 ***	-1.404 ***	-0.992 **		-1.049 *		
	(-2.29)	(-2.15)	(-2.21)	(-2.07)	(-3.04)	(-2.43)	(-3.17)	(-3.04)	(-2.35)		(-1.69)		
Control	0.002	0.175	0.000	-0.293	-0.136	0.112	-0.638	-0.017	0.009	0.286	-0.246	0.393	-0.038
	(0.44)	(1.40)	(0.26)	(-0.90)	(-1.34)	(0.66)	(-1.55)	(-0.93)	(0.49)	(0.81)	(-0.43)	(0.81)	(-0.10)

CONCLUSIONS

- We establish the linkage between national cultures and the asset growth effect
  - Overinvestment as the underlying channel
- Asset growth premia are significant in countries with
  - High individualism
  - Low uncertainty avoidance

CONCLUSIONS

- National cultures dominate proxies of q-theory and limits-to-arbitrage in explaining the asset growth anomaly across countries